

IN THE SPECIFICATION:

Please amend the paragraph beginning at page 1, line 1 as follows:

~~TITLE OF THE INVENTION~~

Please amend the paragraph beginning at page 1, line 4, as follows:

~~BACKGROUND OF THE INVENTION~~

~~Field of the Invention~~

The present technology described herein ~~invention~~ relates to sound generation devices and sound generation programs. More particularly, the present ~~invention~~ technology described herein relates to a sound generation device capable of changing a pitch, etc., of a sound with a simple operation and outputting the sound, and a sound generation program used in the above-described sound generation device.

Please amend the paragraph beginning at page 1, line 13, as follows:

~~Description of the Background Art~~

Conventionally, there are many well-known methods to perform music using an electronic device. For example, a certain type of electronic musical instrument outputs an instrument sound stored electronically in advance from a loudspeaker concurrently with a performer's touch on a keyboard. Also, as an alternative example, ~~an electronic musical instrument performed using a musical instrument other than a keyboard~~, an

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electronic musical instrument that outputs ~~outputting~~, for example, a drum sound when the performer beats a drum pad, etc., is known.

Please amend the paragraph beginning at page 2, line 19, as follows:

Furthermore, the performer is also required to have specialized knowledge in the case of causing the sampler to store the human voice sound and sing a song, ~~the performer is also required to have specialized knowledge~~. Thus, the sampler is not suitable for an ordinary user who desires to enjoy music by causing the electronic musical instrument to sing a song.

Please amend the paragraph beginning at page 2, line 25, as follows:

SUMMARY OF EXEMPLARY EMBODIMENTS ~~OF THE INVENTION~~

Therefore, an aspect object of exemplary embodiments of the present technology ~~described herein invention~~ is to provide a sound generation device allowing even a beginner to enjoy performing music with a simple operation. Another aspect object of ~~the present invention~~ is to provide a sound generation device capable of being caused to sing a song with a simple operation. Still another aspect object of the present inventions is to provide a sound generation program used in the above-described sound generation devices.

Please amend the paragraph beginning at page 3, line 9, as follows:

The exemplary embodiments have ~~present invention has~~ the following features to attain the aspects ~~objects~~ mentioned above (notes in parentheses indicate exemplary elements which can be found in the embodiments to follow, though such notes are not intended to limit the scope of the invention).

Please amend the paragraph beginning at page 3, line 14, as follows:

According to a first aspect, ~~of the present invention,~~ a sound generation device (composed of a main unit 10 and a game cartridge 30) outputs a sound in accordance with an operation by a performer, and comprises a housing, a tilt detecting unit, a sound waveform data storing unit, a sound waveform data reading unit, a sound waveform data processing unit, and a sound outputting unit. The housing (a game device housing 11) is capable of being held by both hands. The tilt detecting unit (comprising an XY-axes acceleration sensor 31, a sensor interface circuit 32, and a CPU 21 executing step S104 or step S206) detects an amount of tilt (around a Y-axis) in at least one direction of the housing. The sound waveform data storing unit (an area of a program ROM 33, in which human voice sound waveform data 51 is stored) stores at least one piece of sound waveform data (human voice sound waveform data 51). The sound waveform data reading unit (the CPU executing step S106 or step S209) reads the sound waveform data from the sound waveform data storing unit at a predetermined timing (for example, when an A button is pressed, or at timing stored in the program ROM 33). The sound waveform data processing unit (comprising a sound generation circuit 23, and the CPU 21 executing

steps S105, S107, and S108, or steps S207, S210, and S211) changes at least a frequency of the sound waveform data read by the sound waveform data reading unit in accordance with the amount of tilt detected by the tilt detecting unit. The sound outputting unit (comprising the sound generation circuit 23, a loudspeaker 18, and the CPU 21 executing step S109 or step S212) outputs the sound waveform data processed by the sound waveform data processing unit as a sound. As such, in accordance with the amount of tilt of the device, a frequency of the sound waveform data is changed, whereby a pitch of the sound output from the sound generation device is changed. Thus, it is possible to provide a sound generation device allowing the performer to operate with enjoyment and perform music with ease by only tilting.

Please amend the paragraph beginning at page 4, line 22, as follows:

According to a second aspect ~~of the present invention~~, the tilt detecting unit detects amounts of tilt (around an X-axis and around the Y-axis) in at least two directions of the housing. The sound waveform data processing unit changes a frequency of the sound waveform data read by the sound waveform data reading unit in accordance with an amount of tilt (around the Y-axis) in a first direction detected by the tilt detecting unit, and changes an amplitude of the sound waveform data in accordance with an amount of tilt (around the X-axis) in a second direction detected by the tilt detecting unit. As such, in accordance with the amount of tilt of the device, a frequency and an amplitude of the sound waveform data are changed, whereby a pitch and a volume of the sound output

from the sound generation device are changed. Thus, it is possible to provide a sound generation device allowing the performer to operate with enjoyment and perform music with ease by only tilting.

Please amend the paragraph beginning at page 5, line 12, as follows:

According to a third aspect, ~~of the present invention,~~ the sound generation device further comprises a lyrics data storing unit. The lyrics data storing unit (an area of the program ROM 33, in which lyrics data 53 is stored) stores at least one piece of lyrics data (lyrics data 53). Also, the sound waveform data storing unit at least stores, as sound waveform data, human voice sound waveform data (human voice sound waveform data 51) obtained when a person utters, at a predetermined pitch, syllables included in the lyrics data stored in the lyrics data storing unit. The sound waveform data reading unit sequentially reads syllables included in the lyrics data from the lyrics data storing unit, and reads human voice sound waveform data corresponding to the read syllable from the sound waveform data storing unit. As such, the sound waveform data, which corresponds to each syllable in the lyrics and whose frequency is changed in accordance with the amount of tilt of the device, is sequentially output at a predetermined timing. Thus, it is possible to provide a sound generation device capable of being caused to sing a song by only tilting.

Please amend the paragraph beginning at page 6, line 6, as follows:

According to a fourth aspect, ~~of the present invention~~, the sound generation device further comprises a first operation unit. The first operation unit (the A button 16) is used by the performer for specifying a sound outputting timing. Also, when the first operation unit is operated (the A button 16 is pressed), the sound waveform data reading unit reads the sound waveform data from the sound waveform data storing unit. As such, the sound waveform data whose frequency is changed in accordance with the amount of tilt of the device is output at the timing specified by the performer. Thus, it is possible to provide a sound generation device allowing the performer to operate while specifying a rhythm or a tempo of a performance.

Please amend the paragraph beginning at page 6, line 18, as follows:

According to a fifth aspect, ~~of the present invention~~, the sound generation device further comprises a backing music data storing unit and a second operation unit. The backing music data storing unit (an area of the program ROM 33, in which backing music data 54 is stored) stores at least one piece of backing music data (backing music data 54). The second operation unit (a start button 14) is used by the performer for specifying a backing music start timing. Also, after the second operation unit is operated (the start button 14 is pressed), the sound outputting unit sequentially reads the backing music data from the backing music data storing unit, and outputs the read backing music data along with the sound waveform data processed by the sound waveform data processing unit. As such, a backing music is output from the sound generation device along with a sound.

Thus, it is possible to notify the performer of an operation timing of the device, thereby enhancing the usability of the sound generation device.

Please amend the paragraph beginning at page 7, line 9, as follows:

According to a sixth aspect ~~of the present invention~~, the sound generation device further comprises a reference play data storing unit, a musical performance results storing unit, a musical performance results checking unit, and a musical performance final results notification unit. The reference play data storing unit (an area of the program ROM 33, in which reference play data 55 is stored) stores at least one piece of reference play data (reference play data 55). The musical performance results storing unit (a work RAM 27 and the CPU 21 executing step S208) stores the amount of tilt detected by the tilt detecting unit as musical performance results data (musical performance results data to be stored in the work RAM 27), by associating the detected amount of tilt with the backing music data stored in the backing music data storing unit. The musical performance results checking unit (the CPU executing step S217) checks the musical performance results data stored in the musical performance results storing unit against the reference play data stored in the reference play data storing unit. The musical performance final results notification unit (comprising an LCD panel 12, the loudspeaker 18, and the CPU executing step S218) notifies the performer of checking results obtained by the musical performance results checking unit as performance final results. As such, the amount of tilt of the device during a performance is checked against a model after the performance

is over. The above-described checking results indicate how correctly the performer has performed the song at a right pitch. Thus, it is possible to realize a sound generation device having an enhanced function as a game device by notifying the performer of the checking results.

Please amend the paragraph beginning at page 8, line 12, as follows:

According to a seventh aspect, ~~of the present invention,~~ the sound generation device further comprises a first operation unit. The first operation unit (the A button 16) is used by the performer for specifying a sound outputting timing. Also, when the first operation unit is operated (the A button 16 is pressed), the sound waveform data reading unit reads the sound waveform data from the sound waveform data storing unit. The musical performance results storing unit stores an operation timing of the first operation unit as a portion of the musical performance results data, by associating the operation timing with the backing music data stored in the backing music data storing unit. As such, an operation timing during a performance is checked against a model after the performance is over. The above-described checking results indicate how correctly the performer has performed the song at a right pitch, with a right rhythm, and in a right tempo. Thus, it is possible to realize a sound generation device having an enhanced function as a game device by notifying the performer of the checking results.

Please amend the paragraph beginning at page 9, line 5, as follows:

According to an eighth aspect, ~~of the present invention~~, a sound generation program causes a game machine to function as a sound generation device. The game machine (composed of the main unit 10 and the game cartridge 30) includes a housing (the game device housing 11) capable of being held by both hands, a tilt detecting unit (comprising the XY-axes acceleration sensor 31 and the sensor interface circuit 32) for outputting a value (X-axis acceleration) corresponding to an amount of tilt in at least one direction of the housing, a program storing unit (a program storage area 40) for storing a program, a data storing unit (a data storage area 50) for storing data including at least one piece of sound waveform data (human voice sound waveform data 51), a program processing unit (the CPU 21) for processing the data stored in the data storing unit, based on the program stored in the program storing unit, and a sound outputting unit (comprising the sound generation circuit 23 and the loudspeaker 18) for outputting processing results obtained by the program processing unit as a sound. The sound generation program comprises a tilt calculating step, a sound waveform data reading step, a sound waveform data processing step, and a sound output controlling step. The tilt calculating step (step S104 or step S206) obtains an amount of tilt (around the Y-axis) in at least one direction of the housing, based on the value (X-axis acceleration) output from the tilt detecting unit. The sound waveform data reading step (step S106 or step S209) reads the sound waveform data from the data storing unit at a predetermined timing (for example, when the A button 16 is pressed, or at timing stored in the program ROM 33). The sound waveform data processing step (steps S105, S107, and S108, or steps S207,

S210, and S211) changes at least a frequency of the sound waveform data read at the sound waveform data reading step, in accordance with the amount of tilt (around the Y-axis) obtained at the tilt calculating step. The sound output controlling step (step S109 or step S212) causes the sound waveform data processed at the sound waveform data processing step to be output from the sound outputting unit as a sound.

Please amend the paragraph beginning at page 10, line 15 as follows:

According to a ninth aspect, ~~of the present invention,~~ the tilt detecting unit outputs values (acceleration in X-and Y-axes directions) corresponding to amounts of tilt in at least two directions of the housing. Also, the tilt calculating step obtains the amounts of tilt (around the X-axis and around the Y-axis) in at least two directions of the housing, based on the values output from the tilt detecting unit. The sound waveform data processing step changes a frequency of the sound waveform data read at the sound waveform data reading step, in accordance with an amount of tilt (around the Y-axis) in a first direction obtained at the tilt calculating step, and changes an amplitude of the sound waveform data in accordance with an amount of tilt (around the X-axis) in a second direction obtained at the tilt calculating step. Please amend the paragraph beginning at page 11, line 4 as follows: According to a tenth aspect, ~~of the present invention,~~ the data storing unit further stores at least one piece of lyrics data (lyrics data 53), and stores, as sound waveform data, at least human voice sound waveform data (human voice sound waveform data 51) obtained when a person utters syllables included in the stored lyrics

data at a predetermined pitch. Also, the sound waveform data reading step sequentially reads syllables included in the lyrics data from the data storing unit, and reads human voice sound waveform data corresponding to the read syllable from the data storing unit.

Please amend the paragraph beginning at page 11, line 14 as follows:

According to an eleventh aspect, ~~of the present invention~~, the game device further includes a first operation unit (the A button 16) with which the performer specifies a sound outputting timing. When the first operation unit is operated (the A button 16 is pressed), the sound waveform data reading step reads the sound waveform data from the data storing unit.

Please amend the paragraph beginning at page 11, line 20 as follows:

According to a twelfth aspect, ~~of the present invention~~, the game device further includes a second operation unit (the start button 14) with which the performer specifies a backing music start timing. The data storing unit further stores at least one piece of backing music data (backing music data 54). After the second operation unit is operated (the start button 14 is pressed), the sound output controlling step sequentially reads the backing music data from the data storing unit, and outputs the read backing music data along with the sound waveform data processed at the sound waveform data processing step.

Please amend the paragraph beginning at page 12, line 5 as follows:

According to a thirteenth aspect, ~~of the present invention~~, the data storing unit further stores at least one piece of reference play data (reference play data 55). Also, the sound generation program further comprises a musical performance results storing step, a musical performance results checking step, and a musical performance final results notification step. The musical performance results storing step (step S208) causes the data storing unit to store the amount of tilt obtained at the tilt calculating step as musical performance results, by associating the obtained amount of tilt with the backing music data stored in the data storing unit. The musical performance results checking step (step S217) checks the musical performance results data stored at the musical performance results storing step against the reference play data stored in the data storing unit. The musical performance final results notification step (step S218) notifies the performer of checking results obtained at the musical performance results checking step as performance final results.

Please amend the paragraph beginning at page 12, line 22 as follows:

According to a fourteenth aspect, ~~of the present invention~~, the game device further includes a first operation unit (the A button 16) with which the performer specifies a sound outputting timing. When the first operation unit is operated (the A button is pressed), the sound waveform data reading step reads the sound waveform data from the data storing unit. The musical performance results storing step stores an operation timing

of the first operation unit as a portion of the musical performance results data, by associating the operation timing with the backing music data stored in the data storing unit.

Please amend the paragraph beginning at page 13, line 7 as follows:

These and other objects, features, aspects and advantages of the exemplary embodiments of the present invention will become more apparent from the following detailed description of exemplary embodiments the present invention when taken in conjunction with the accompanying drawings.

Please amend the paragraph beginning at page 14, line 13 as follows:

DESCRIPTION OF NON-LIMITING EXEMPLARY ~~THE PREFERRED~~
EMBODIMENTS

FIG. 1 is an illustration showing an external view of a sound generation device according to embodiments of the present invention. The sound generation device includes a main unit 10 and a game cartridge 30 removably inserted into the main unit 10. When viewed from the front, the main unit 10 has a game device housing 11, an LCD panel 12, a cross button 13, a start button 14, a select button 15, an A button 16, a B button 17, and a loudspeaker 18. The game cartridge 30 stores a program (hereinafter, referred to as a sound generation program) for causing the main unit 10 to function as a sound generation device.

Please amend the paragraph beginning at page 15, line 8 as follows:

The CPU 21 controls an operation of the main unit 10. The CPU 21 is connected to the various buttons 13 to 17, the LCD driver 22, the sound generation circuit 23, the communication interface circuit 24, the display RAM 26, the work RAM 27, the sensor interface circuit 32, the program ROM 33, and the backup RAM 34. The cross button 13, the start button 14, the select button 15, the A button 16, and the B button 17 are ~~operation means~~ input devices operated by a player.

Please amend the paragraph beginning at page 33, line 22 as follows:

While the exemplary embodiments ~~invention has~~ been described in detail, the foregoing description is in all aspects illustrative and not restrictive. It is understood that numerous other modifications and variations can be devised without departing from the scope of the invention